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(54) **Title:** FOLDING SLATTED BARRIER FOR A SWIMMING POOL

(57) **Abstract:** The invention relates to a folding perimeter barrier for a body of water, particularly a swimming pool (1). The inventive barrier is principally composed of at least one pair of panels (2, 3) articulated to each other, namely a fencing panel (3) pivotably articulated to a ground panel (2), which forms a walkway around the pool (1) when the barrier is in deployed position. Both of said panels (2, 3) are of openwork construction, comprising slats (5, 6) separated by openings (7, 8), the slats (5, 6) of one panel (2, 3) being opposite the openings (7, 8) of the other panel (2, 3), such that when the barrier is in folded position, the slats (5, 6) of the one panel (2, 3) are seated inside the openings (7, 8) of the other panel to form a deck around the pool (1).

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## **Folding slatted barrier for a swimming pool**

### **Technical field of the invention**

The present invention relates to the field of safety systems for bodies of water, especially swimming pools, and more particularly to the field of perimeter barriers for pools. It is directed to a folding barrier that can be maneuvered between a deployed position in which the barrier encloses the pool and a folded position in which the barrier is collapsed to provide access to the pool.

### **Prior art**

For safety reasons it is necessary to enclose bodies of water, such as swimming pools or the like, when they are not in use or have been left unsupervised. The purpose of such action is primarily to prevent drowning accidents, more particularly in children, by blocking access to the pool. It is therefore common for bodies of water to be equipped with perimeter barriers.

One problem that presents itself is the unaesthetic nature of these barriers and the amount of space they take up. Moreover, when the pool is under supervision they are rendered superfluous. See, for example, the documents WO2004007873 (RAT), US5630572 (GUAY) and FR2809432 (GENTILE), which describe barriers of this kind.

The solutions that are usually proposed involve heavy construction and major alterations to the environs of the pool in order to accommodate the collapsed barrier, including its operating equipment, if any. Furthermore, such barriers still take up considerable space, especially when equipped with motorized operating equipment.

It will be noted that FR2809432 proposes more particularly to make use of the barrier to improve the pool environs by having it additionally serve as a deck when in the at least

partially folded position. However, although this improvement makes it possible to utilize the barrier when it is in folded position, the barrier still takes up considerable space and its installation on site entails major alterations to the environs of the pool.

### **Subject matter of the invention**

The object of the present invention is to propose a folding perimeter barrier for a body of water, such as a swimming pool, which has a simple and relatively compact structure, is preferably motor-operated, and is utilized in the folded position to improve the pool environs.

More precisely, the invention proposes such a barrier that is easy and simple to install on site, including on an existing site, without greatly modifying the structure of the pool environs, and whose spatial extent is fully utilized to improve the pool when the latter is in use.

The barrier of the present invention is a folding perimeter barrier for a body of water, particularly a swimming pool or the like. Said barrier is more particularly maneuverable between a deployed position in which the barrier encloses the pool and a folded position in which the barrier is collapsed to provide access to the pool. Said barrier is of the kind principally composed of a frame equipped with means of anchoring to a support bordering the pool, and a fencing panel that is pivotably articulated to the frame in order to be set upright in the deployed position and folded down toward the support in the folded position.

According to the present invention, a barrier of the aforesaid kind is recognizable in that it is principally composed of at least one pair of panels articulated to each other. A first panel constitutes said fencing panel, which is pivotably articulated to a ground panel that constitutes the frame. Said ground panel rests flatly on the frame to form a walkway around the pool when the barrier is deployed. Both panels are of openwork construction and comprise slats separated by openings, the slats of the one panel being opposite the

openings of the other panel. These measures are such that when the barrier is in folded position, the slats of the one panel are seated inside the openings of the other panel to form a deck around the pool.

According to the measures of the invention, the frame is formed simply of the ground panel, which is capable of being placed atop an existing support bordering the pool, or of being seated inside a clearance left during the forming of the support, the depth of said clearance being just sufficient, on the order of the thickness of the ground panel, so that the latter lies flush.

Also according to the measures of the invention, when the barrier is in deployed position the slats of the ground panel form a plane that the user can employ as a walkway around the pool, while the upright fencing panel forms a railing. When the barrier is in folded position, the ground panel and the fencing panel jointly form a substantially continuous plane that can be used as a deck.

The barrier can be installed quickly and easily and requires no major modification of the pool environs, even when disposed on an existing support. It will be noted that the means for anchoring the frame to the support can advantageously be limited to bolt-type means or the like, serving to fix the ground panel to the support.

According to an advantageous embodiment, the ground panel is formed of a box constituted by struted profiles bearing slats, said box forming a sole plate designed to support the fencing panel and to which the latter is articulated. Such an articulation is implemented in particular by means of bearings, each of which engages a respective profile of the ground panel and the slats of the fencing panel.

The barrier preferably comprises at least one folding brace, each of whose ends is articulated to a respective one of the panels. The box (if present) of the ground panel advantageously houses the brace when the barrier is in folded position.

The barrier is preferably equipped with locking means at least in the deployed position, if not in the folded position as well. Said locking means are constituted for example by strikers disposed at the ends of the barrier.

It will be understood that the barrier as a whole can be composed of a plurality of abutted panels attached to one another by means of fastening devices, such as by keying, pinning or a similar mechanism, latches for example.

According to a first variant, the barrier can be operated manually to change it back and forth between the folded and deployed positions. Preferred, however, is a variant embodiment in which the barrier can be operated by drive means to change it back and forth between the folded and deployed positions.

The drive means are more particularly constituted by at least one power cylinder whose ends are in articulated engagement respectively with the ground panel and with the fencing panel.

Said power cylinder is in particular drivable by a hydraulic unit whose operation is placed under the dependence of control means. It will be noted that this hydraulic unit is capable of being housed inside a box adjacent the barrier, said box being a decorative box or a box having a seating function.

The brace is advantageously constituted by the power cylinder, which is particularly disposed in the middle region of the panel. It will be understood that when plural panels are abutted and assembled to one another, at least an arbitrary one of these panels is capable of being equipped with the power cylinder for the overall operation of the panels.

According to a preferred embodiment, the panels are equipped with guide ramps for the power cylinder, which is for example articulated by its bottom end to the ground panel and by its head end to the fencing panel, or vice versa. The power cylinder is preferably

oriented horizontally in the retracted position, corresponding to the folded position of the barrier, to limit its space consumption and in particular to enable it to be housed inside the box forming the ground panel without thereby substantially increasing the thickness of the box. The barrier is advantageously equipped with a first inclined ramp, provided on the ground panel. This first ramp is intended to cause the power cylinder to straighten up until it is stopped at the bottom of a second ramp carried by the fencing panel. As a result of these measures, the outward telescoping of the power cylinder causes it to straighten up and bear against the fencing panel, thereby raising the latter into the deployed-barrier position.

The control means comprise in particular switches that can be operated by the user to actuate the hydraulic unit. These switches are preferably remote control switches. The control means further comprise sensors that detect the end of travel of the fencing panel.

These end-of-travel sensors may be sensors that detect the end of travel of the power cylinder. Preferred, however, is an embodiment in which the end-of-travel sensors include sensors that detect the transmission and reception of a signal, for example a light signal, an ultrasonic signal or the like, so as to interrupt the operation of the hydraulic unit if the signal is breached.

It will be noted that this interruption can occur equally well at the end of stroke of the fencing panel in the deployed-barrier position or in the event that the signal is breached in an unforeseen manner. It will be appreciated in this regard that said sensors are advantageously safety sensors for interrupting the operation of the power cylinder in the event of an unforeseen breach of the signal. It will also be noted that an audio alarm is preferably sounded in the event of unforeseen breaking of the signal, to indicate that said signal has been breached unexpectedly, by a child, for example.

The power cylinder is preferably a double-acting power cylinder, particularly equipped with non-return valves or a similar device, so as to hold the barrier in any arbitrary

position when the movement of the power cylinder is interrupted. In addition, the control means of the power cylinder preferably comprise dynamometric means to interrupt the operation of the power cylinder should an obstacle be present in the path of the fencing panel while it is in motion. These measures are designed to interrupt the movement of the barrier in an emergency, both when the user commands the cessation of movement and when the fencing panel encounters an unexpected obstacle during its travel.

Particularly in the case where the barrier is motor-operated, the locking means are constituted by motorized strikers, particularly driven electromagnetically or by like means, which are actuated concomitantly with the actuation of the power cylinder by means of switches that can be operated by the user.

It will be appreciated that the difference in response time between the electromagnetic operation of the strikers and the starting of the hydraulic unit is used to advantage to allow the panel to be released and the power cylinder to be operated by simultaneous control.

### **Description of the figures**

The present invention will be better understood and details pertaining to it will become apparent from the following description of exemplary embodiments, provided in connection with the figures on the accompanying plates, wherein:

Fig. 1 and Fig. 2 are schematic perspective views of a folding pool barrier according to the present invention, respectively in folded position and in deployed position.

Fig. 3 and Fig. 4 are profile diagrams of the barrier represented in the preceding figures, respectively in folded position and in deployed position and according to respective on-site installation configurations in which the barrier can be erected next to the pool.

Fig. 5 and Fig. 6 are profile diagrams of the barrier represented in the preceding figures, respectively in folded position and in deployed position and according to respective on-site installation configurations in which the barrier can be erected next to the support.



Fig. 7 is a diagram illustrating a barrier according to a first embodiment of the invention, a manually operated barrier, in profile and in deployed position.

Fig. 8 is a diagram illustrating a barrier according to a second embodiment of the invention, a motor-operated barrier, in profile and in deployed position.

Figs. 9 to 12 are diagrams successively illustrating the movement of a barrier according to the variant embodiment depicted in Fig. 6 from its folded position to its deployed position.

In Figs. 1 and 2, a barrier designed to enclose a pool 1, visible in Figs. 3 and 4, is principally composed of at least two panels 2 and 3 articulated to each other. It will be understood that to enclose the entire periphery of the pool, a plurality of panels can be abutted and assembled successively one to the other, particularly by keying, or can be oriented in a dihedral to form a corner, as illustrated in the figures.

A ground panel 2 is intended to rest on a support 4 bordering the pool 1, to which support 4 the ground panel is anchored, particularly by bolting. A fencing panel 3 is articulated to the ground panel 2 between a folded-barrier position, represented in Fig. 1, and a deployed-barrier position, represented in Fig. 2. These panels 2 and 3, which are of openwork construction, are formed of slats 5 and 6 separated by openings 7 and 8, and are disposed relative to one another such that when the barrier is in folded position, the slats 5, 6 of the one panel 1, 2 are seated in the openings 7, 8 of the other panel 1, 2. It can be seen from Fig. 1 that the folded barrier forms a deck with a substantially solid surface formed jointly by the adjacent slats 5, 6 of the ground panel and the fencing panel. In Fig. 2, the fencing panel forms a railing when the barrier is in deployed position, while the ground panel constitutes a walkway for the users.

In Fig. 3 and Fig. 6, the ground panel 2 is principally constituted by a box 9 formed from profiles that are assembled to one another and that support the slats 6. In Fig. 3 and Fig. 5 said box 9 rests on the surface of the support 4, while in Fig. 4 and Fig. 6 the box 9 is seated inside a clearance provided in the support 4, so as to be flush with the ground. Accessorily in Figs. 3 and 4, a baseboard 10 is disposed behind the box 9.

In Figs. 3 and 4, the barrier is installed on site such that fencing panel 3 is erected next to the pool, while the pathway formed by ground panel 2 is disposed next to the support. In Figs. 5 and 6, the barrier is installed on site such that fencing panel 3 is erected next to the support, while the pathway formed by ground panel 2 is disposed next to the pool.

The barrier installation measures described by Figs. 5 and 6 make it possible to arrange the barrier surrounding the entire pool in such a way that comfort nooks are provided in its corners. These corners of the barrier are, for example, configured as boxes forming benches facing the pool and bordered at the rear by a transparent, fixed wall. It may be noted at this point in the description that these boxes are each intended in particular to additionally constitute a cabinet for housing a hydraulic or pneumatic unit designed to actuate power cylinders for operating the barrier, as will be described below.

In Fig. 4 and Figs. 6-8, the barrier is equipped with a brace 11 articulated at its ends to one and the other of the panels 2 and 3. In Fig. 7, the brace is constituted by an arm whose end engaging ground panel 2 is mounted slidably along a slideway 12 or the like, provided in the box 9, to enable it to be collapsed when the barrier is in folded position. The fencing panel 3 is articulated to a profile 13 of the ground panel, particularly by means of bearings.

In Fig. 8, brace 11 is constituted by a power cylinder for motorized operation of the barrier. In Fig. 9, power cylinder 11 is oriented horizontally so as to be housed inside box 9. Ground panel 2 is equipped with a first ramp 14, inclined with respect to the ground, on which the head 15 of power cylinder 11 rests. In Fig. 10, extension of the rod causes the head 15 of the power cylinder to slide along inclined ramp 14 and the body of power cylinder 11 to straighten up. In Fig. 11, the head 15 of power cylinder 11 is stopped at the bottom of a second ramp 16 carried by fencing panel 3, with the result that when power cylinder 11 reaches the end of its travel, fencing panel 2 is in an upright position, as illustrated in Fig. 12.